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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,416	04/03/2001	Ralph S. Shoberg	RST-007-B	2653

7590 09/13/2002

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EXAMINER

COMPTON, ERIC B

ART UNIT	PAPER NUMBER
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3726

DATE MAILED: 09/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/825,416

Applicant(s)

SHOBERG, RALPH S.

Examiner

Eric B. Compton

Art Unit

3726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Remarks*

1. Claims 14-22, added with the preliminary amendment, dated April 3, 2001, have been renumber claims 9-17, to preserve the originally claim numbering.

### *Drawings*

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP 608.02(g).

### *Claim Rejections - 35 USC 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 4-5, 7, 9-10, and 15-17 rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,106,176 to Rice et al.

Regarding claims 1, 7, 9, and 15-16, Rice et al disclose a method for auditing tension in a threaded fastener comprising:

a) providing a installed threaded fastener (e.g., a bolt);

- b) applying a torque to the threaded fastener with a wrench (1) until a torque is reached such that the fastener rotated;
- c) measuring the torque values applied to the fastener with a torque transducer (6) and the angle the fastener rotates with an angle transducer (5) to determine a breakaway point (B) and determining the rate of change of torque per unit of rotation (module 14);
- d) creating a plot of the measure torque values versus the measured angle values (see Figure 1).
- e) extending a tangent from the torque versus angle plot at a point (B), or predetermined torque (see col 7, lines 11-13) where the fastener was rotating to the angle axis and defining the point (G) at which the tangent crosses the angle axis to be zero degrees (see Figure 1, curve II);
- f) scaling the angle axis from the zero degree point based on the actual rotation of the fastener and measuring the angle of rotation from the zero degree point to the angle corresponding to the torque necessary to rotate the fastener ( $\Delta\Phi$ ); and
- g) comparing the measured angle against a predetermined angle (module 26).

Regarding claims 2, and 10, the fastener is being tightened, therefore the torque is applied in a tightening direction.

Regarding claims 4-5, and 17, the predetermined angle is a design parameter determined based upon joint experiences (see col 6, lines 9-16).

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 11-14, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al.

Rice et al disclose the invention cited above. However, they do not disclose the loosening of a threaded fastener or specify the amount of rotation applied.

Regarding claims 3 and 13, it is well known in the art to loosen a threaded fastener with a torque applying apparatus. Rice et al seek to audit the tension in a fastener such that the joint is not over tensioned. Both Rice et al and Applicant disclose conditions that affect the tensioning fasteners, making measuring torque alone unreliable. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the method of Rice et al to loosen a joint by auditing the loosening torque applied, such that the joint is not over torqued when breaking the joint.

Regarding claims 11-12, and 14, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied torque for a rotation from 1-14 degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

3. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al in view of US Patent 3,962,910 to Spyridakis et al.

Rice et al disclose the invention cited above. However, they do not disclose that the fastener is to be replaced if the breakaway torque or angle or rotation do not meet or exceed a predetermined value.

Spyridakis et al disclose a method and apparatus for auditing the tension in a threaded fastener. Note: Rice et al make specific reference to this patent (col 3, line 43). It is disclosed that "The predetermined minimum torque level on the fastener must be reached and a predetermined maximum torque level not exceeded within a predetermined range of the additional parameter or the fastener is rejected" (Abstract). Rice et al previously disclosed that the amount of rotation after the breakaway point has been determined is more reliable than measuring torque alone.

Regarding claims 6 and 8, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the fastener if the breakaway torque or angle of rotation is exceeded in the method of Rice et al, in light of the teachings of Spyridakis et al, in order to remove fasteners that are defective.

#### ***Prior Art References***


The prior art references listed on the enclosed PTO-892, but not used in a rejection of the claims, are cited for their teachings of auditing the tension load on a threaded fastener.


***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (703) 305-0240. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory M. Vidovich can be reached on (703) 308-1513. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

ebc   
September 6, 2002

  
GREGORY M. VIDOVICH  
PRIMARY EXAMINER